

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 13.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-006228**Date Inspected:** 14-Apr-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** Mike Gregson, Rob Walters**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Hinge K Pipe Beams**Summary of Items Observed:**

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The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

OIW Fabrication Shop-Bay 3

Hinge-K Pipe Beam Assembly 102A-4:

a111-4 Forging to a110-4 Base Plate

QA Inspector randomly noticed the submerged arc welding (SAW) on CJP (AWS D1.5 TC-U9a-S) pipe beam base plate, (piece mark identified as a110-4) to pipe forging, (piece mark identified as a111-4), was complete and this assembly 102A-4 was in-process of being heat straightened, of the a110-4 base plate, due to plate distortion, caused by the submerged arc welding (SAW) operations.

QA Inspector spoke with QC Inspector Mike Gregson and Mr. Mike Gregson explained that the heat straightening process was being performed in accordance with the OIW approved heat straightening procedure (SP-006 Rev.2) and AWS D1.5 (sect. 3.7.3).

QA Inspector witnessed QC Inspector Rob Walters was present at all times to verify heat applied does not exceed 1100F (600 C), per AWS D1.5 and OIW approved procedure.

QA Inspector performed a random check of heat applied and verified a temperature of approximately 800F (427

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C), which is in compliance with AWS D1.5 and the OIW applicable heat straightening procedure.

Mr. Mike Gregson explained to QA Inspector that Brinell hardness readings will be taken at random locations, for metallurgical control of material properties and a detailed heat straightening report would follow, after completion of the heat straightening process.

Hinge-K Pipe Beam Assembly 102A-3:

a111-3 Forging to a110-3 Base Plate

QA Inspector noticed the heat straightening on this a110-3 base plate was complete, per AWS D1.5 and OIW approved heat straightening procedure (SP-006 Rev.2).

QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained a detailed heat straightening report would be completed and QA Inspector would be provided photocopies.

QA Inspector also witnessed qualified QC Inspector Rob Walters, performing 100% preliminary ultrasonic weld testing on this CJP (AWS D1.5 TC-U9a-S) a111-3 pipe forging to a110-3 base plate, for pipe beam assembly 102A-3.

QC Inspector Rob Walters explained to QA Inspector that no rejectable indications were found during this preliminary ultrasonic weld inspection and a final ultrasonic weld inspection would be performed after a 72 hour time cooling period, which is in accordance with AWS D1.5 Sect. 12.16.4, Cooling Times Prior to Inspection.

Hinge-K Pipe Beam Fuse Sub-Assembly 120A-10:

a125 Stiffener Ring to a124-10 Half Fuse

QA Inspector randomly witnessed OIW welder #O6, Mr. Tim O'Brian perform submerged arc welding (SAW) on PJP (AWS D1.5 TC-P5-S) internal ring stiffener, (piece mark identified as a125), to half fuse pipe sub-assembly, (piece mark identified as a124-10), in the flat position (1G).

QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the OIW welder #O6, was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4020).

QA Inspector noticed Mr. Mike Gregson and QC Inspector Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Tim O'Brian was in compliance with the applicable welding procedure specification (WPS 4020).

QA Inspector verified Mr. Tim O'Brian was currently qualified for this welding process/position and performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit, which is in compliance with the OIW welding procedure specification (WPS 4020).

Hinge-K Pipe Beam Assembly 102A-2:

a111-2 Forging to a110-2 Base Plate

QA Inspector randomly witnessed OIW welder #J6, Mr. Craig Jacobsen perform submerged arc welding (SAW) on CJP (AWS D1.5 TC-U9a-S) pipe beam base plate, (piece mark identified as a110-2) to pipe forging, (piece mark identified as a111-2), in the flat position (1G).

QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the OIW welder #J6, was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4016).

QA Inspector noticed Mr. Mike Gregson and QC Inspector Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Craig Jacobson was in compliance with the applicable welding procedure specification (WPS 4016).

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QA Inspector measured a weld bevel prep angle of 30 degrees (60 degrees included), performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit, which is in compliance with applicable welding procedure specification.

Hinge-K Pipe Beam Fuse Assembly 120A-2:

a124-3 Half Fuse to a124-11 Half Fuse

QA Inspector randomly witnessed welder #S53, Mr. Jerry Shepherd, perform submerged arc welding (SAW) on CJP (AWS D1.5 B-U3c-S), half fuse pipe assembly, (piece mark identified as a124-3), to half fuse pipe assembly, (piece mark identified as a124-11), in the flat position (1G).

QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the OIW welder #S53, was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4020).

QA Inspector noticed Mr. Mike Gregson and QC Inspector Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Jerry Shepherd was in compliance with the applicable welding procedure specification (WPS 4020).

QA Inspector verified Mr. Jerry Shepherd was currently qualified for this welding process/position and performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit, which is in compliance with the OIW welding procedure specification (WPS 4020).

OIW Storage Yard

Hinge-K Pipe Beam Fuse Assembly 120A-1:

a124-7 Half Fuse to a124-6 Half Fuse

QA Inspector noticed this completed pipe beam fuse assembly had been moved from OIW Bay 3, to the outside storage area. QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the welding was complete on all internal ring stiffeners and the CJP (AWS D1.5 B-U3c-S), fuse splice (a124-7/a124-6), was complete. QC Inspector Mike Gregson also explained that all non-destructive testing was completed by qualified OIW QC Inspectors Rob Walters and Steve Barnett, per AWS D1.5 and contract specifications.

QA Inspector reviewed the applicable OIW non-destructive testing reports, including Visual, Magnetic Particle (MT-2244-125), Ultrasonic (UT-2244-24) and noticed that no rejectable indications were found by OIW QC Inspectors.

QA Inspector performed approximately 10% ultrasonic weld inspection on the CJP (AWS D1.5 B-U3c-S) fuse splice (a124-7/a124-6), designated as weld joint #WM3-18 and found no rejectable indications. QA Inspector notified QC Inspector Mike Gregson of these results and completed the applicable ultrasonic testing report (TL6027). See completed fuse splice in attached picture below.....

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## Summary of Conversations:

As noted above.

## Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Vance,Sean	Quality Assurance Inspector
<b>Reviewed By:</b>	Adame,Joe	QA Reviewer

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